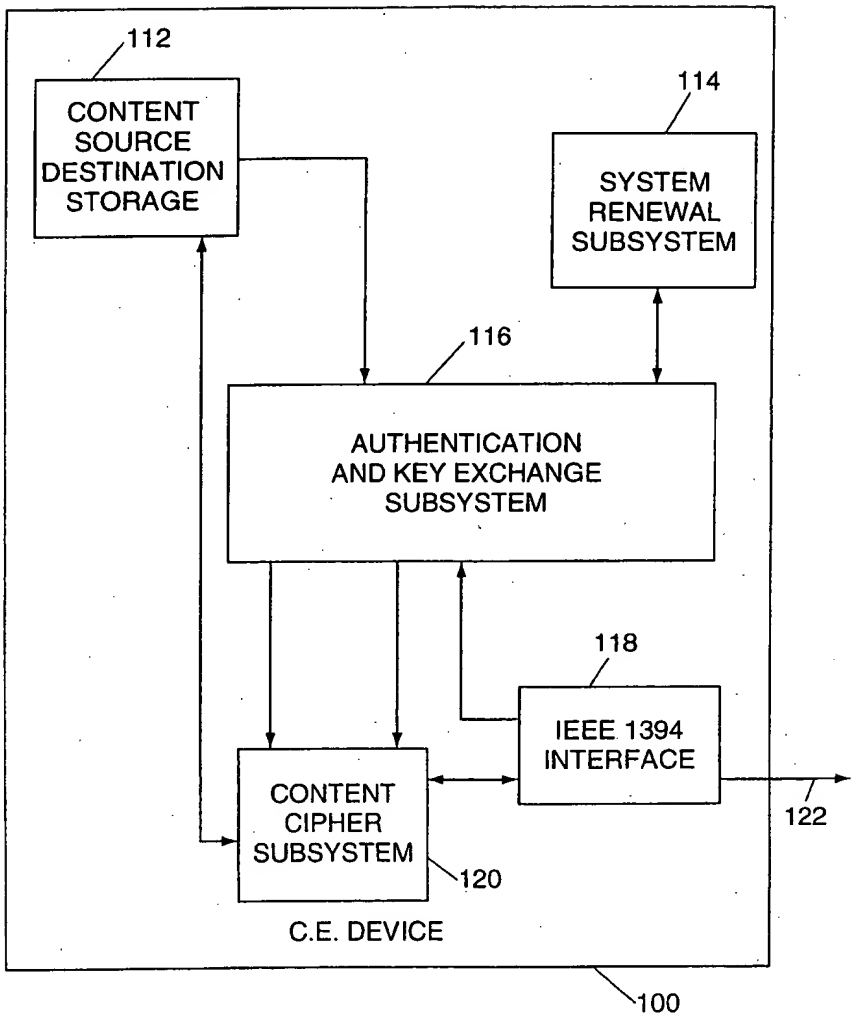

PRIOR ART

FIG. 1

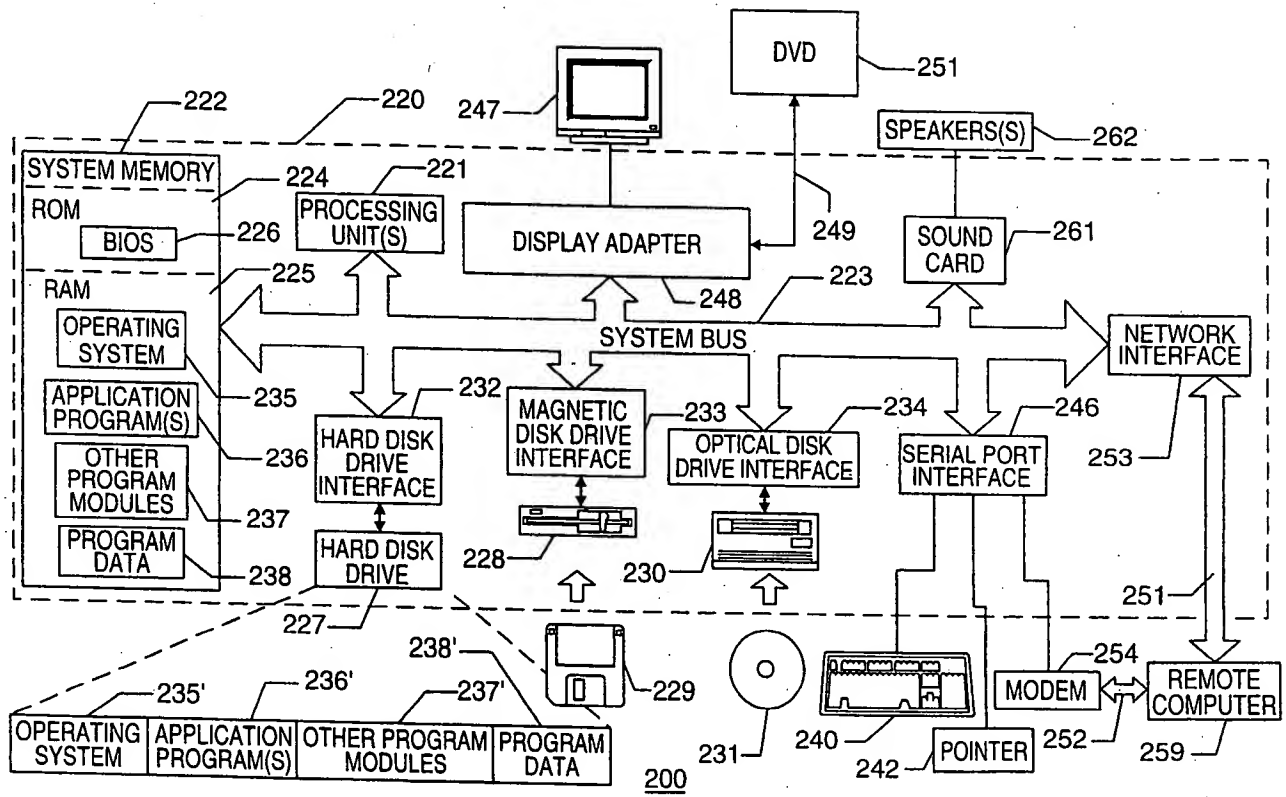
DVD
251
247
222
220
SPEAKERS(S)
262
SYSTEM MEMORY
224
221
ROM
PROCESSING UNIT(S)
BIOS
226
DISPLAY ADAPTER
249
SOUND CARD
261
225
223
RAM
248
OPERATING SYSTEM
SYSTEM BUS
NETWORK INTERFACE
APPLICATION PROGRAM(S)
235
232
MAGNETIC DISK DRIVE INTERFACE
233
234
246
HARD DISK DRIVE INTERFACE
OPTICAL DISK DRIVE INTERFACE
SERIAL PORT INTERFACE
253
236
OTHER PROGRAM MODULES
237
PROGRAM DATA
238
HARD DISK DRIVE
228
230
251
227
238'
254
229
235'
236'
237'
MODEM
REMOTE COMPUTER
OPERATING SYSTEM
APPLICATION PROGRAM(S)
OTHER PROGRAM MODULES
PROGRAM DATA
231
240
252
259
242
POINTER
200

FIG. 2

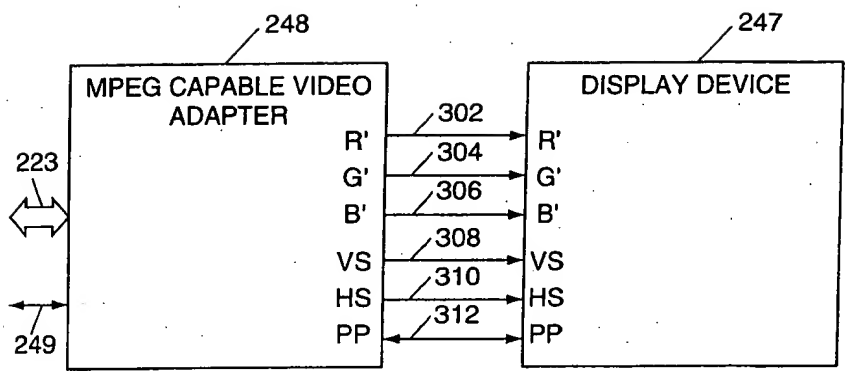
248
MPEG CAPABLE VIDEO ADAPTER
247
DISPLAY DEVICE
223
249
R'
G'
B'
VS
HS
PP
302
304
306
308
310
312
R'
G'
B'
VS
HS
PP

FIG. 3

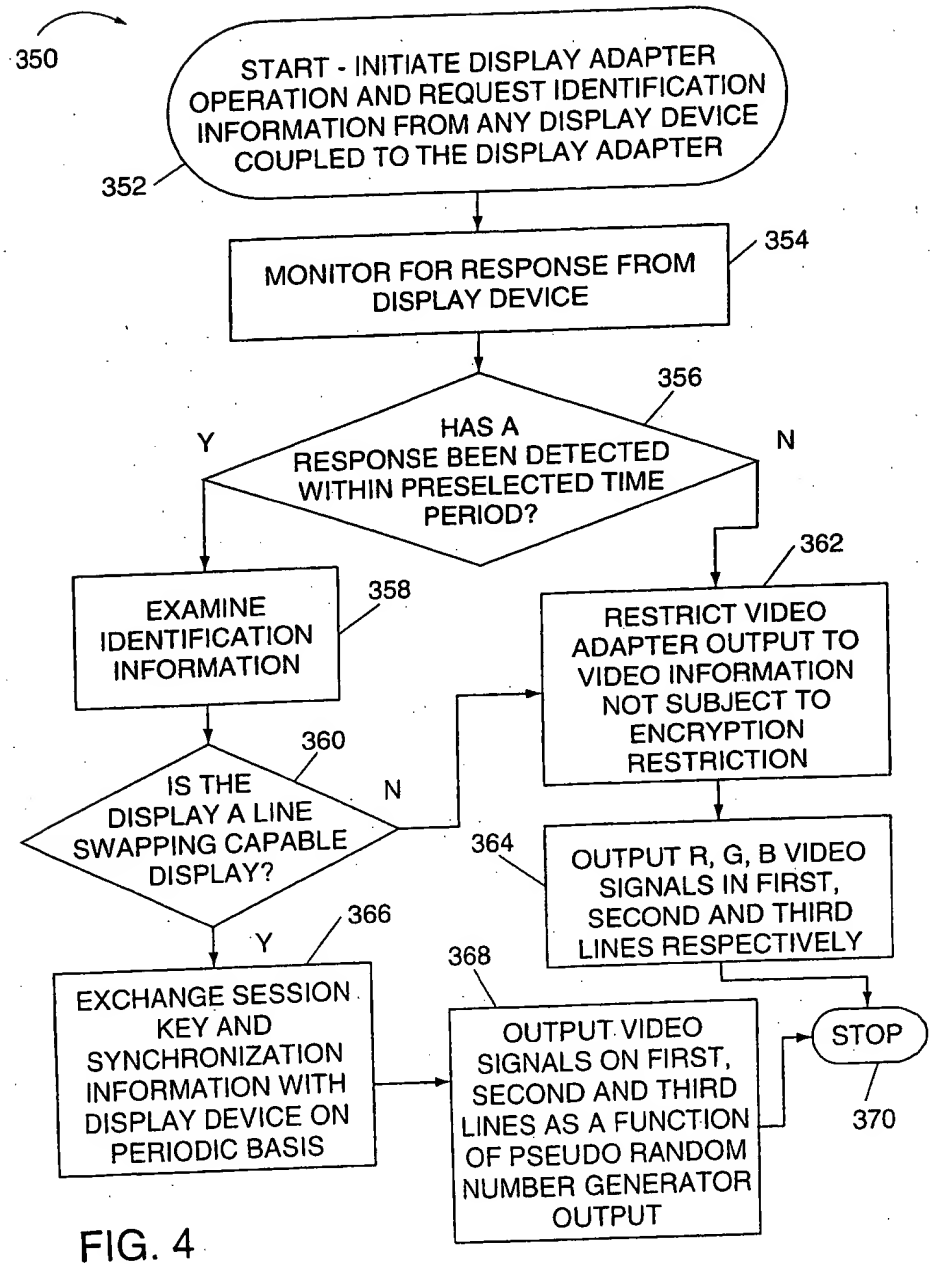
350
START - INITIATE DISPLAY ADAPTER OPERATION AND REQUEST IDENTIFICATION INFORMATION FROM ANY DISPLAY DEVICE COUPLED TO THE DISPLAY ADAPTER
352
MONITOR FOR RESPONSE FROM DISPLAY DEVICE
354
HAS A RESPONSE BEEN DETECTED WITHIN PRESELECTED TIME PERIOD?
356
Y
N
EXAMINE IDENTIFICATION INFORMATION
358
RESTRICT VIDEO ADAPTER OUTPUT TO VIDEO INFORMATION NOT SUBJECT TO ENCRYPTION RESTRICTION
362
IS THE DISPLAY A LINE SWAPPING CAPABLE DISPLAY?
360
N
Y
OUTPUT R, G, B VIDEO SIGNALS IN FIRST, SECOND AND THIRD LINES RESPECTIVELY
364
EXCHANGE SESSION KEY AND SYNCHRONIZATION INFORMATION WITH DISPLAY DEVICE ON PERIODIC BASIS
366
OUTPUT VIDEO SIGNALS ON FIRST, SECOND AND THIRD LINES AS A FUNCTION OF PSEUDO RANDOM NUMBER GENERATOR OUTPUT
368
STOP
370

FIG. 4

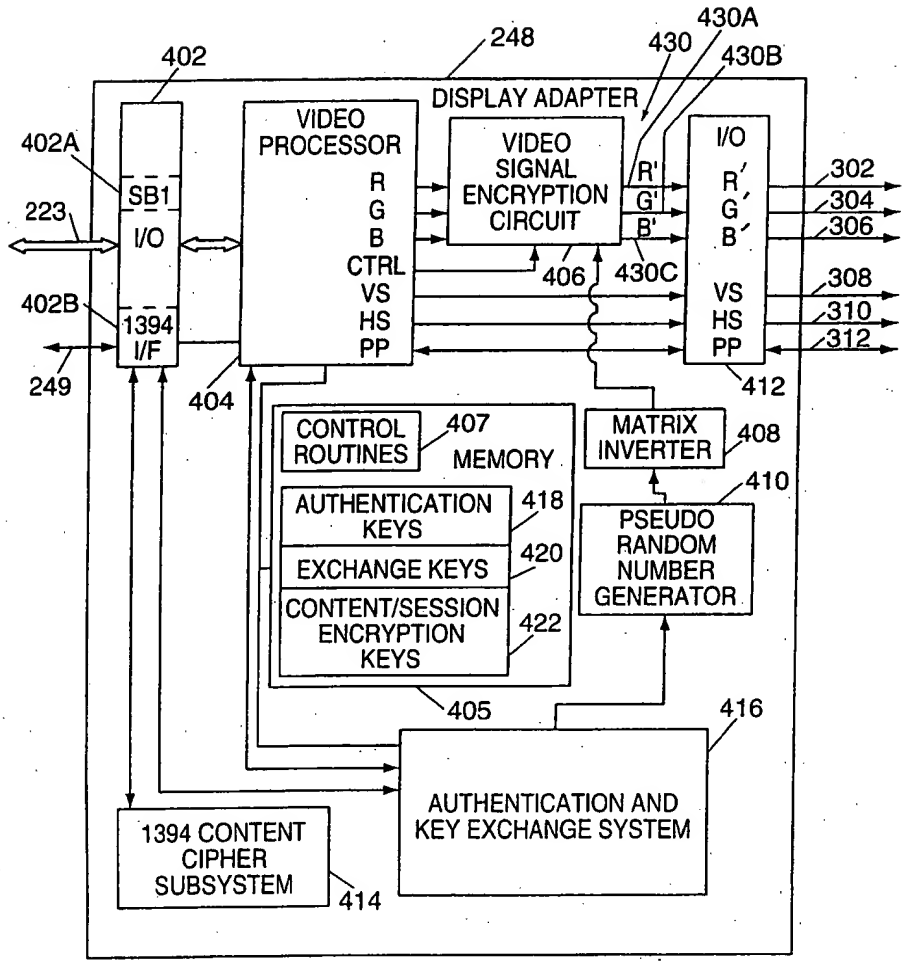
248
430A
430
430B
402
DISPLAY ADAPTER
402A
SB1
223
I/O
402B
1394
I/F
249
404
VIDEO
PROCESSOR
R
G
B
CTRL
VS
HS
PP
VIDEO
SIGNAL
ENCRYPTION
CIRCUIT
R'
G'
B'
406
430C
I/O
R'
G'
B'
VS
HS
PP
302
304
306
308
310
312
412
CONTROL
ROUTINES
407
MEMORY
MATRIX
INVERTER
408
410
AUTHENTICATION
KEYS
418
EXCHANGE KEYS
420
CONTENT/SESSION
ENCRYPTION
KEYS
422
PSEUDO
RANDOM
NUMBER
GENERATOR
405
416
AUTHENTICATION AND
KEY EXCHANGE SYSTEM
1394 CONTENT
CIPHER
SUBSYSTEM
414

FIG. 5

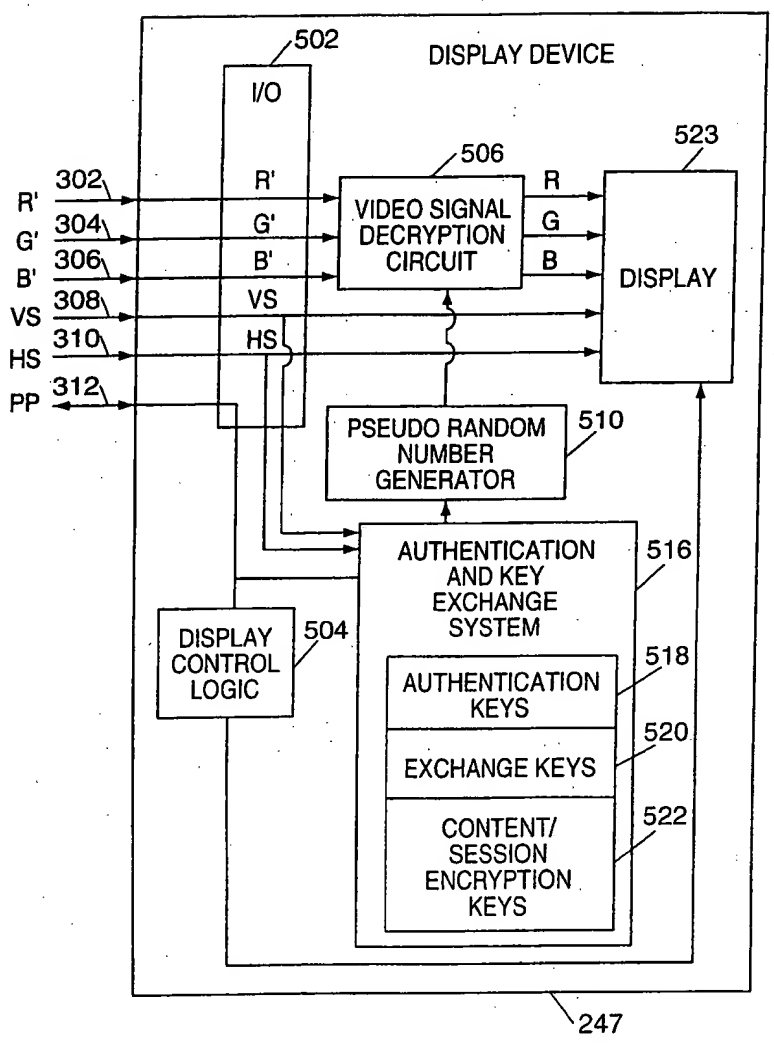
DISPLAY DEVICE
502
I/O
R'
G'
B'
VS
HS
302
304
306
308
310
312
PP
506
VIDEO SIGNAL DECRYPTION CIRCUIT
R
G
B
523
DISPLAY
PSEUDO RANDOM NUMBER GENERATOR
510
AUTHENTICATION AND KEY EXCHANGE SYSTEM
516
DISPLAY CONTROL LOGIC
504
AUTHENTICATION KEYS
518
EXCHANGE KEYS
520
CONTENT/ SESSION ENCRYPTION KEYS
522
247

FIG. 6

602

$$\begin{bmatrix} R' \\ G' \\ B' \end{bmatrix} = \begin{bmatrix} -1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} R \\ G \\ B \end{bmatrix}$$

FIG. 7

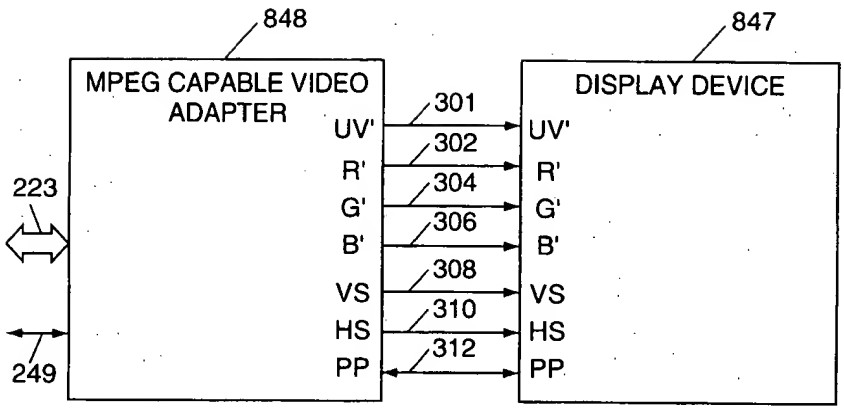
848
MPEG CAPABLE VIDEO ADAPTER
847
DISPLAY DEVICE
223
249
UV'
R'
G'
B'
VS
HS
PP
301
302
304
306
308
310
312
UV'
R'
G'
B'
VS
HS
PP

FIG. 8

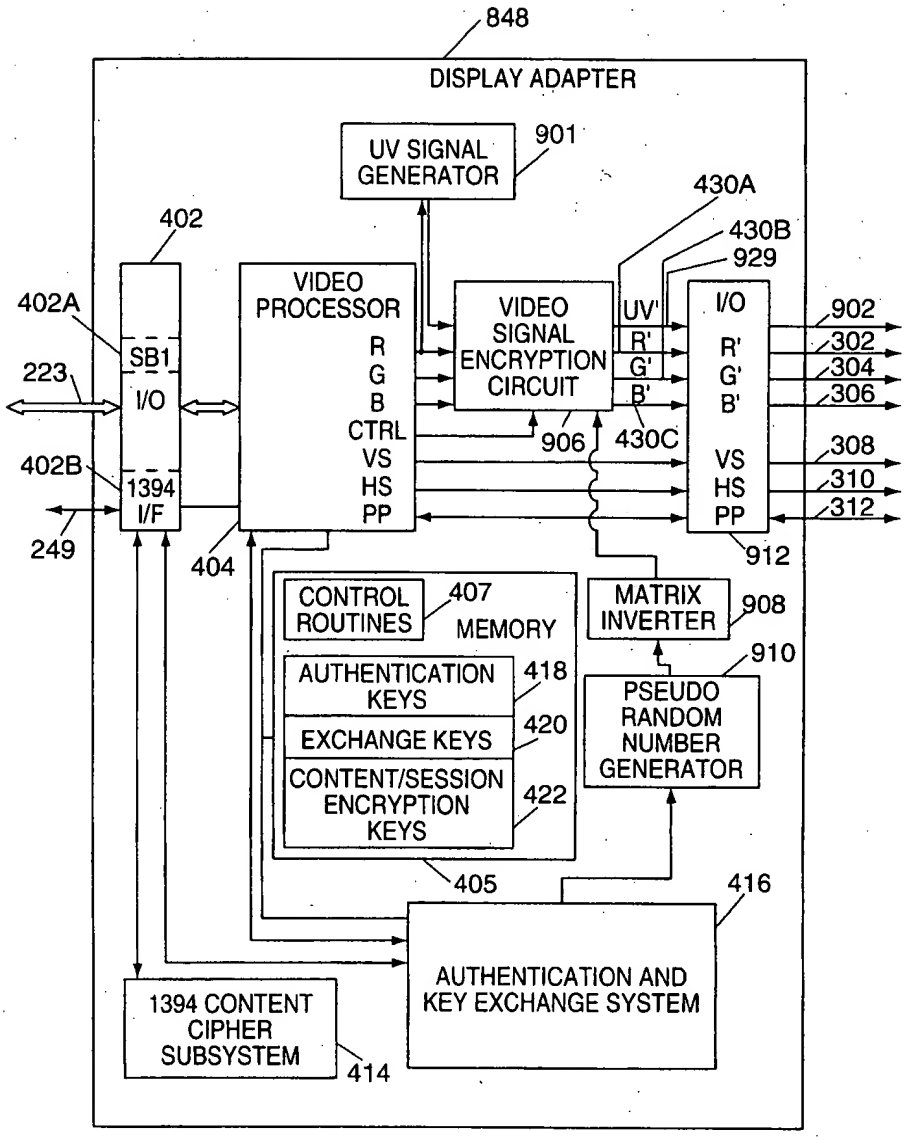
848
DISPLAY ADAPTER
UV SIGNAL GENERATOR
901
430A
430B
929
402
402A
SB1
I/O
223
402B
1394 I/F
249
VIDEO PROCESSOR
R
G
B
CTRL
VS
HS
PP
404
VIDEO SIGNAL ENCRYPTION CIRCUIT
UV'
R'
G'
B'
906
430C
I/O
R'
G'
B'
VS
HS
PP
902
302
304
306
308
310
312
912
CONTROL ROUTINES
407
MEMORY
AUTHENTICATION KEYS
418
EXCHANGE KEYS
420
CONTENT/SESSION ENCRYPTION KEYS
422
405
MATRIX INVERTER
908
910
PSEUDO RANDOM NUMBER GENERATOR
416
AUTHENTICATION AND KEY EXCHANGE SYSTEM
1394 CONTENT CIPHER SUBSYSTEM
414

FIG. 9

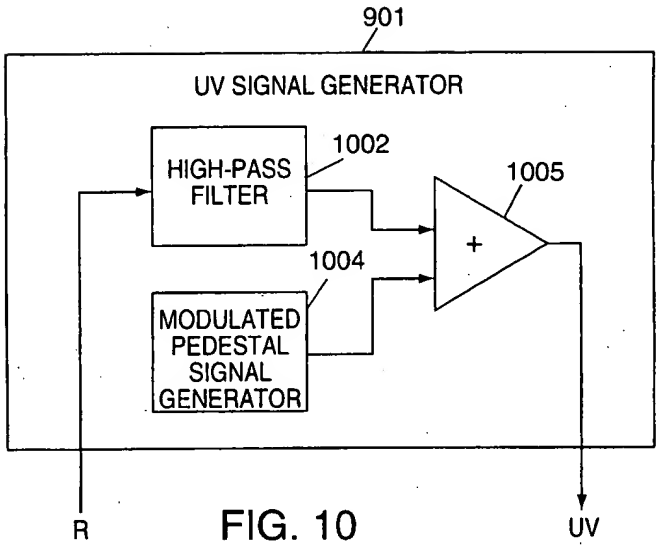

FIG. 10

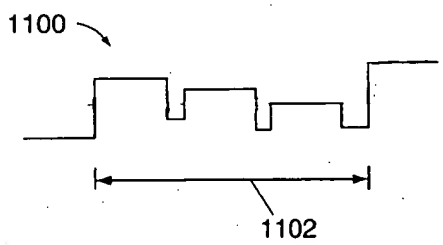

FIG. 11

FIG. 12

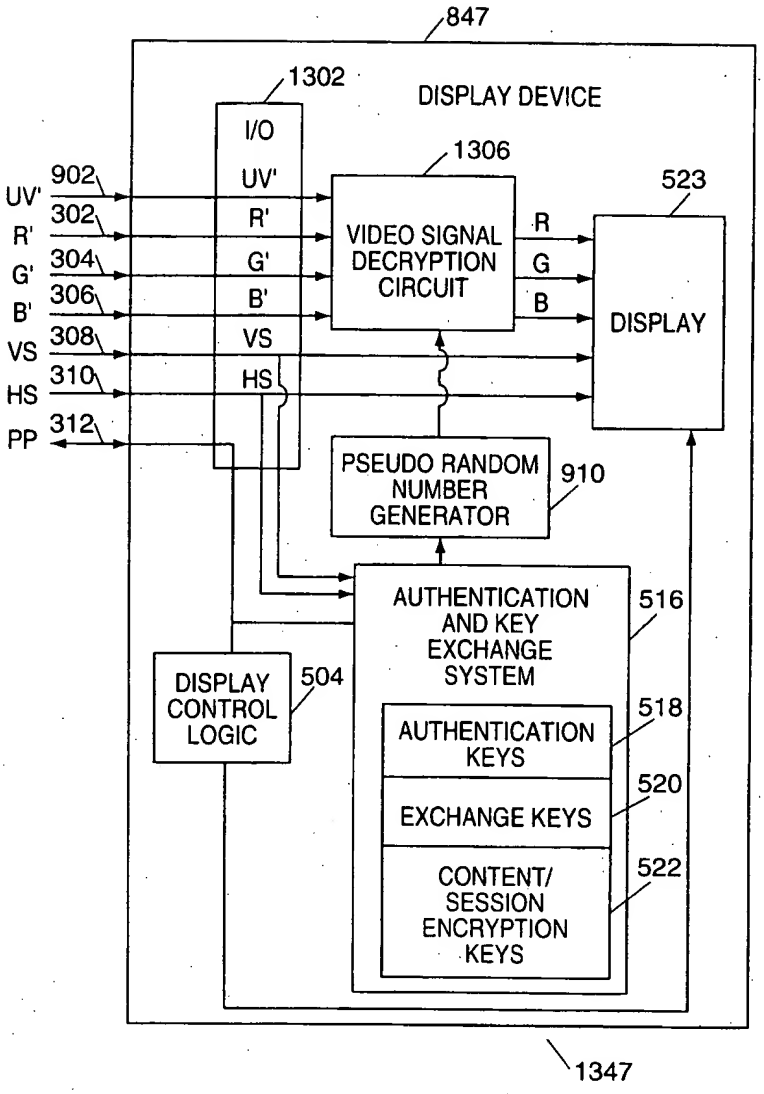
847
DISPLAY DEVICE
1302
I/O
UV'
R'
G'
B'
VS
HS
902
302
304
306
308
310
312
UV'
R'
G'
B'
VS
HS
PP
1306
VIDEO SIGNAL DECRYPTION CIRCUIT
R
G
B
523
DISPLAY
PSEUDO RANDOM NUMBER GENERATOR
910
AUTHENTICATION AND KEY EXCHANGE SYSTEM
516
DISPLAY CONTROL LOGIC
504
AUTHENTICATION KEYS
518
EXCHANGE KEYS
520
CONTENT/ SESSION ENCRYPTION KEYS
522
1347

FIG. 13

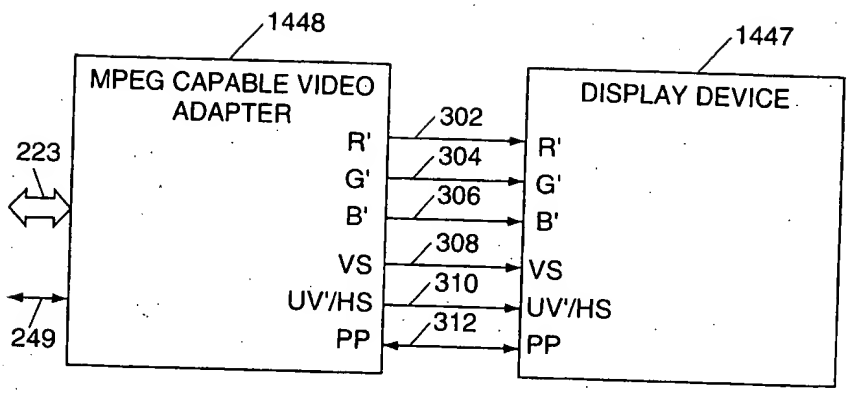
1448
MPEG CAPABLE VIDEO ADAPTER
223
249
R'
G'
B'
VS
UV'/HS
PP
302
304
306
308
310
312
1447
DISPLAY DEVICE
R'
G'
B'
VS
UV'/HS
PP

FIG. 14

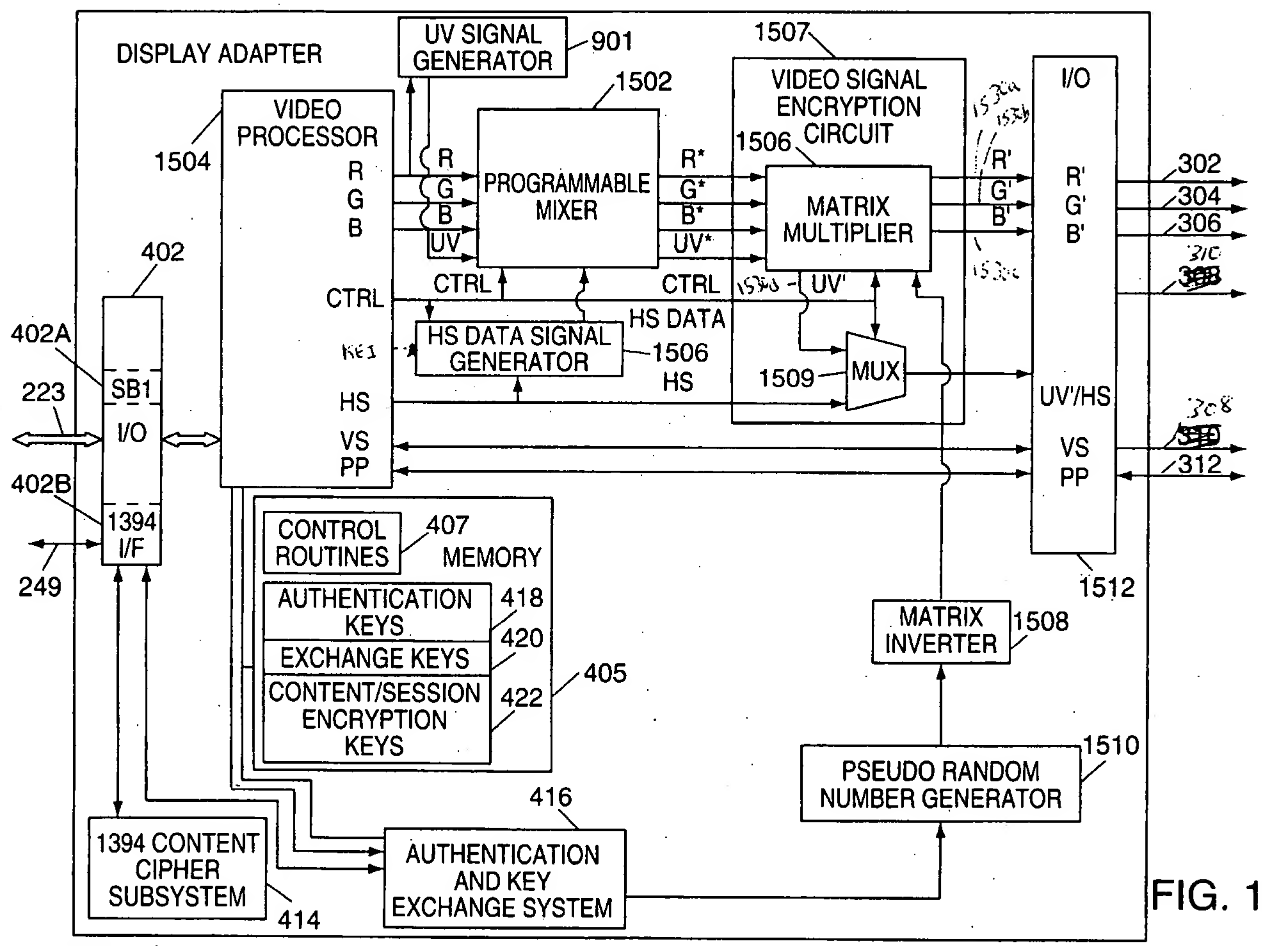
DISPLAY ADAPTER
UV SIGNAL GENERATOR
901
1502
1507
VIDEO SIGNAL ENCRYPTION CIRCUIT
I/O
VIDEO PROCESSOR
1504
R
G
B
PROGRAMMABLE MIXER
R*
G*
B*
UV*
1506
MATRIX MULTIPLIER
R'
G'
B'
302
304
306
402
CTRL
UV
CTRL
CTRL
UV'
HS DATA
HS DATA SIGNAL GENERATOR
1506
HS
1509
MUX
UV'/HS
402A
223
SB1
I/O
HS
VS
PP
VS
PP
312
402B
1394 I/F
249
CONTROL ROUTINES
407
MEMORY
1512
AUTHENTICATION KEYS
418
EXCHANGE KEYS
420
CONTENT/SESSION ENCRYPTION KEYS
422
405
MATRIX INVERTER
1508
PSEUDO RANDOM NUMBER GENERATOR
1510
416
1394 CONTENT CIPHER SUBSYSTEM
414
AUTHENTICATION AND KEY EXCHANGE SYSTEM

FIG. 15

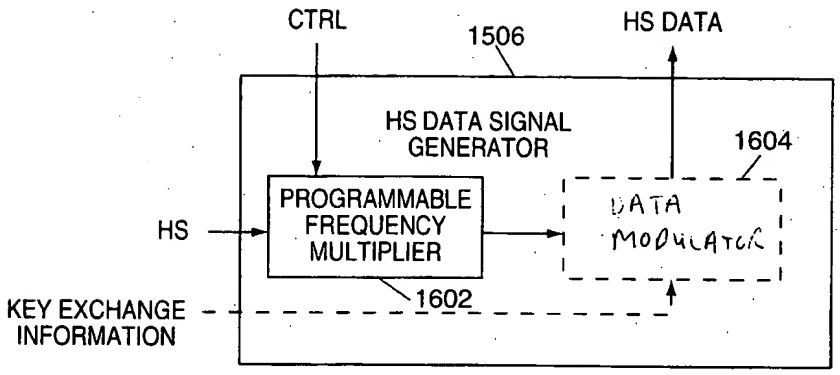
CTRL
1506
HS DATA
HS DATA SIGNAL GENERATOR
1604
PROGRAMMABLE FREQUENCY MULTIPLIER
DATA MODULATOR
HS
1602
KEY EXCHANGE INFORMATION

FIG. 16

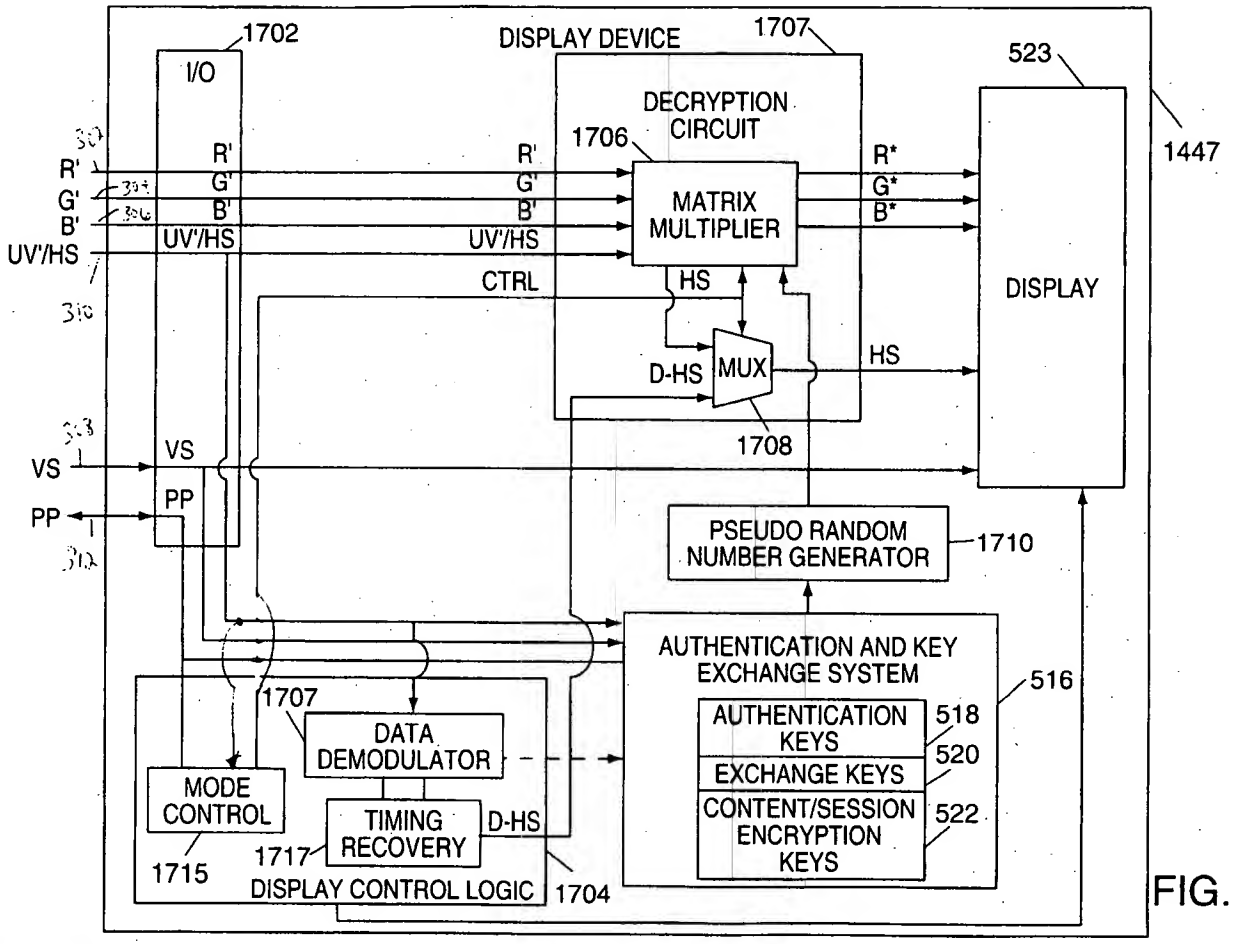

FIG. 17